CLEARANCE REPORT FOR THREATENED PLANT SURVEYS
Ute Ladies' Tresses *(Spiranthes diluvialis)*, and the
Colorado Butterfly Plant (*Gaura neomexicana ssp. coloradensis*)

West Lake View Road, Cherry Creek State Park, Colorado

November 7, 2002

Prepared by:
Science Applications International Corporation
8100 Shaffer Parkway, Suite 100
Littleton, Colorado 80127

Introduction

The Colorado Department of Transportation (CDOT) Region-6 proposes to improve a stretch of West Lake View Road where it crosses Cherry Creek in Cherry Creek State Park. Science Applications International Corporation (SAIC) conducted a survey on August 29, 2002 to determine presence/absence of the Ute Ladies'-tresses orchid (*Spiranthes diluvialis*) (hereafter referred to as *Spiranthes*) and the Colorado butterfly plant (*Gaura neomexicana ssp. coloradensis*) (hereafter referred to as *Gaura*) within the project area. No *Spiranthes* or *Gaura* were found within the project area.

Project Description

At the request of Cherry Creek State Park, CDOT proposes to make improvements to a ¼-mile segment of West Lake View Road to prevent frequent flooding. The road will be elevated approximately 18 inches above its present elevation to prevent water flow over the road during heavy precipitation events. Habitat up to 10 feet away from the road in both directions may be directly impacted by the new road footprint, and/or construction activities. The current roadway ranges from being flush with adjacent lands on the north side of Cherry Creek, to being elevated approximately four feet above the adjacent floodplain south of the creek.

Project Location

The project area is located in Arapahoe County where West Lake View Road crosses Cherry Creek in Cherry Creek State Park. The project area can be found on the USGS 7.5' topographic quadrangles Fitzsimons and Parker, Colorado at Township 5 South, Range 67 West in the southern-half of the SE ¼ of Section 12, and northern-half of the NE ¼ of Section 13 (Figure 1). The site consists of a relatively straight 1/4-mile segment of roadway that crosses Cherry Creek and its associated floodplains. The project area is bounded by a bike trail to the west, and a side road to a parking area cul-de-sac on the east.

UTM coordinates: UTM Zone 13: 4385873 meters N, 514236 meters E

Ecological and Site Features

Cherry Creek flows in a northerly direction through the project area. The USGS 7.5' quadrangles depict this section of Cherry Creek as being composed of several intermittent streams spread out over a ¼ mile in an east-west direction. At the time of the survey only the eastern most channel had flowing water. The creek is partially dammed on the south side of the road at a culvert where it forms a linear pond surrounded with marshy vegetation (e.g., cattails, bulrush).

Elevation: Average elevation is 5,565 feet above mean sea level (MSL).

Soils: The survey area has one general soil association, the alluvial land-Nunn association, which is found in floodplains and terraces and can be described as deep, nearly level, with mainly sandy and loamy soils (Larsen and Brown 1971). This description confirmed by SAIC during site visit. No redoximorphic features observed, soil was dry to bottom of soil pit (18 inches).

Hydrology: Floodplain adjacent to Cherry Creek. Site floods periodically, especially during high precipitation events.

Vegetation: The project area is generally forested. On the southeast side of the road 40 feet tall plains cottonwood (*Populus deltoides*) dominate with an open understory. In this area coyote willow (*Salix exigua*) occur sparsely along dry channels and in forest openings. The forest openings are densely vegetated with an overstory of coyote willow and an understory of reed canarygrass (*Phalaris arundinacea*) and leafy spurge (*Euphorbia esula*). Also southeast of the road, at the northeast end of the survey area, the plains cottonwood forest is younger, more open, and has a relatively dense, 3 to 4 feet tall, wheatgrass (*Agropyron spp.*) understory. Dense marshy vegetation occupy the area adjacent to Cherry Creek and is composed of broad-leaved cattails (*Typha latifolia*) and hardstem bulrush (*Schoenoplectus acutus*).

Northwest of the road the project area is also forested with cottonwood, but exhibits higher plant species diversity. A small community of wooly sedge (*Carex lanuginosa*) occurs west-adjacent to Cherry Creek and a dense stand of up to 9 feet tall, occurring north of the creek. Coyote willow is also found on the northwest side of the road along road margins, in internal forest openings, and along a few of the dry channels.

On both sides of the road at the west end of the survey area the overstory is more diverse with peach-leaf willow (*Salix amygdaloides*), crack-willow (*Salix fragilis*), and Russian olive (*Elaeagnus angustifolia*) mixed in with plains cottonwood trees. Photographs of the different community types can be found in Appendix B.

Ecological Condition/Management History: Human impacts to the survey area include residential development on private land surrounding the Park, motor vehicle traffic and bicyclists on West Lake View Road, fishing in the ponded section of Cherry Creek, and recreational use of the trails in the floodplain. Noxious weeds such as Canada thistle (*Breea arvense*) and leafy spurge were observed near hiking trails.

Background on the Ute Ladies'-tresses Orchid and the Colorado Butterfly Plant

Ute Ladies'-tresses Orchid

Ute ladies'-tresses orchid is endemic to moist soils in mesic or wet meadows near springs, lakes, or perennial streams. *Spiranthes* is listed as having a "no indicator" status by the Central Plains Region of USFWS (Reed 1997). As a point of comparison, the national wetland indicator and western Colorado (Region 8) indicator statuses for *S. diluvialis* are the same – listing it as a facultative wetland plus (FACW+) species. As such, this species can be expected to occur in riparian/wetland habitat.

Spiranthes occurs primarily in areas where the vegetation is relatively open and not overly dense, overgrown, or overgrazed (50 CFR 17). However, at some wet meadow sites the Ute ladies'-tresses orchid has been found in fairly dense vegetation with meadow grasses 2 to 3 feet tall, with a litter layer from 1 to 4 inches thick (USFWS 1998). The only known populations of Ute ladies'-tresses orchid along the Front Range of Colorado's Rocky Mountains are near Boulder Creek in the City of Boulder, and along Clear Creek near the Towns of Golden and Wheat Ridge (50 CFR 17). There have been no documented occurrences of the Ute ladies'-tresses orchid in Arapahoe County (50 CFR 17, Spackman et al. 1997). Plant species commonly associated with the orchid on the Front Range are:

Common Name	**Botanical Name**
Horsetail	*Equisetum spp.*
Milkweed	*Asclepias incarnata*
Verbena	*Verbena hastata*
Agalinus	*Agalinus tenuifolia*
Lobelia	*Lobelia siphilitica*
Blue-eyed grass	*Sisyrinchium spp.*
Triglochin	*Triglochin spp.*
Carpet bentgrass	*Agrostis stolonifera*
Reedgrass	*Calamagrostis spp.*
Goldenrod	*Solidago spp.*

(USFWS 1992)

Colorado Butterfly Plant

The Colorado butterfly plant occurs on subirrigated, alluvial soils on level or slightly sloping floodplains and drainage bottoms at elevations ranging from 5,000 to 6,400 feet (Federal Register 65(202):62302). Colonies are typically found in low depressions or along bends in wide, active, meandering stream channels a short distance upslope of the actual channel. It commonly occurs in plant communities dominated by:

Common Name	**Botanical Name**
Redtop (wetter sites)	*Agrostis stolonifera*
Kentucky bluegrass (wetter sites)	*Poa pratensis*
Wild licorice (drier sites)	*Glycyrrhiza lepidota*
Flodman's thistle (drier sites)	*Cirsium flodmanii*
Curlytop gumweed (drier sites)	*Grindelia squarrosa*

Smooth scouring rush (drier sites) *Equisetum laevigatum*
(Federal Register 65(202):62302)

Gaura is listed as an obligate wetland plant species by the Central Plains Region of the United States Fish and Wildlife Service (Reed 1997). As such, this species can be expected to most often occur in riparian/wetland habitat.

Habitat of the Colorado butterfly plant is typically open, without dense or overgrown vegetation. The establishment and survival of seedlings appears to be enhanced at sites where tall and dense vegetation has been removed by some form of disturbance (Federal Register 65(202):62302). In the absence of occasional disturbance, the plant's habitat can become choked out by dense growth of willows (*Salix* spp.), grasses (including redtop, wiregrass (*Juncus balticus*), and exotic plants (such as Canada thistle (*Cirsium arvense*) and leafy spurge (*Euphorbia esula*), which prevents new seedlings from becoming established and replacing plants that have died. Coyote willow (*Salix exigua*) and Canada thistle may become dominant in Colorado butterfly habitats that are not periodically flooded or otherwise disturbed (Federal Register 65(202):62302).

Description of Survey Methods
Timing of this survey on August 29, 2002 coincided with the flowering/fruiting period of both *Spiranthes* and *Gaura*; which occurs from July 20 through August 31 for *Spiranthes* (USFWS 1992), and June through September, or from July through October (Spackman et al. 1997) for *Gaura*. The *Spiranthes* population in Boulder, Colorado was confirmed by the surveyor to be flowering in the second week of August 2002.

Because the entire project area occurs within the floodplain of Cherry Creek and is dominated by riparian and wetland vegetation, the entire site was survey for both *Spiranthes* and *Gaura*.

Prior to initiating the survey the following sources were reviewed for both species:

- *Colorado Flora: Eastern Slope* (Weber and Whitman 1996)
- *Colorado Rare Plant Field Guide* (Spackman et al. 1997)
- *Rare Plants of Colorado* (Colorado Native Plant Society 1997)

Additional sources of information reviewed for *Spiranthes* include the 1992 United States Fish and Wildlife Services' "Interim Survey Requirements for *Spiranthes diluvialis*", photographs taken by the surveyor of the orchid and its habitat in Boulder, and notes on the Boulder populations from City of Boulder Open Space Plant Ecologist – Lynn Riedel.

Following this review, the project area was carefully and systematically inspected for the presence of *Spiranthes* and *Gaura*. The survey consisted of two components, an overview survey for both species within 100 feet of the roadway, followed by a more focused survey for either plant species within 30 feet of the roadway. This was done for both sides of West Lake View Road within the project area. This approach ensured complete coverage of the area potentially impacted by roadway improvements.

Survey Results

Neither *Spiranthes diluvialis* nor *Gaura neomexicana ssp. coloradensis* were found at any location within the project area. Plant species observed that are known to be associated with either *Spiranthes* or *Gaura* included redtop, Kentucky bluegrass, and wild licorice. Though these plant species did occur, they were not dominant. In general the site is well vegetated with a relatively closed canopy. This type of habitat is not suitable for either of the threatened species surveyed for. It is important to note that this survey represents a *'snapshot'* in time of the project area, and that these species do not always bloom every year. Specific discussion of survey results for both species are included below.

Ute Ladies'-tresses Orchid

Ute ladies'-tresses orchid was not documented at any location within the project area. The habitat found within the project area is potential habitat for the orchid, but because the vegetation is fairly dense and overgrown (Appendix B) it is not considered suitable habitat for its occurrence. These findings are supported by the 1998 *Spiranthes* surveys conducted in Cherry Creek State Park by Burns & McDonnell for the U.S. Army Corps of Engineers (Burns & McDonnell 1998).

It is recommended that no future surveys are necessary for the orchid in this area because:

1) the site contains dense vegetative cover or a relatively closed canopy,
2) there are no known occurrence of the orchid in Arapahoe County, and
3) no Ute ladies'-tresses orchid were found during the current field survey, or the 1998 survey conducted by Burns & McDonnell (1998).

Colorado Butterfly Plant

The Colorado butterfly plant was also not documented in the project area. The project area contains dense vegetation, including coyote willow and Canada thistle (Appendix 2), that are thought to prevent establishment of the Colorado butterfly plant.

It is recommended that no future surveys are necessary for the Colorado butterfly plant in this area because:

1) the vegetation is either dense or contains a relatively closed canopy,
2) no documented reports of the Colorado butterfly plant exist for Arapahoe County, and
3) the field survey resulted in a negative finding.

References

Burns & McDonnell, Inc. 1998. Report on surveys for the Preble's meadow jumping mouse and Ute Ladies's - tresses orchid for the Tri-Lakes Project in Arapahoe, Douglas, and Jefferson Counties, Colorado. Prepared for the U.S. Department of the Army Corps of Engineers, Omaha District, Omaha, Nebraska.

Colorado Native Plant Society. 1997. *Rare Plants of Colorado.* 2nd Edition. Falcon Press Publishing Co., Helena, Montana, and the Rocky Mountain Nature Association, Estes Park, Colorado.

Larsen, L.S., and J.B. Brown. 1971. Soil survey of Arapahoe County, Colorado. USDA Soil Conservation Service, Wahington DC. 78 pages plus maps.

Reed, P.B. 1997. Revision of the National List of Plant Species that Occur in Wetlands. Department of the Interior, U.S. Fish and Wildlife Service.

Spackman, S., B. Jennings, J. Coles, C. Dawson, M. Minton, A. Dratz, and C. Spurrier. 1997. *Colorado Rare Plant Field Guide.* Prepared for the Bureau of Land Management, the U.S. Forest Service, and the U.S. Fish and Wildlife Service by the Colorado Natural Heritage Program.

(USFWS) United States Fish and Wildlife Service. 1992. Interim Surveys Requirement for Spiranthes diluvialis. Nov. 23, 1992. Colorado State Office. Golden, CO. 9 p.

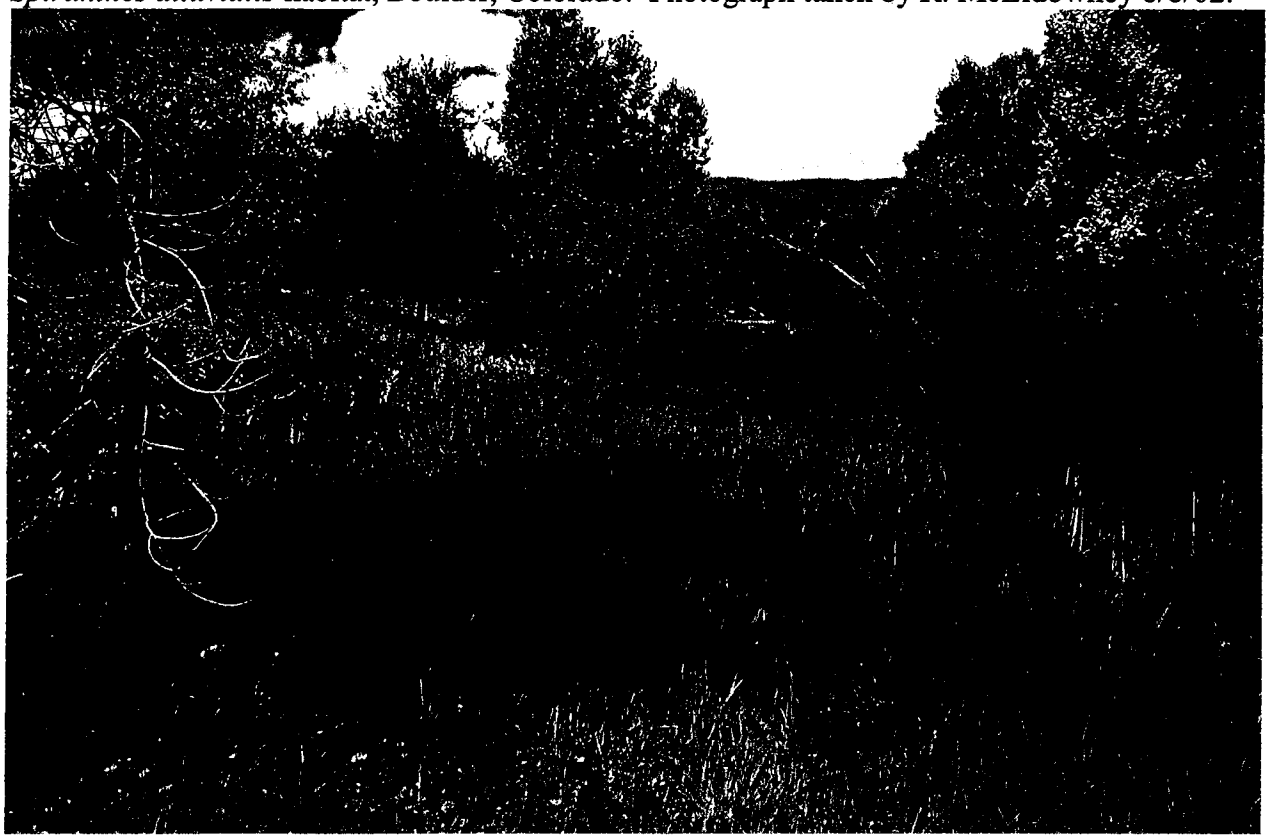
(USFWS) United States Fish and Wildlife Service. 1998. Section 7 Guidelines – Snake River Basin Office. *Spiranthes diluvialis.* Ute ladies'-tresses (threatened). February 4, 1998.

Weber, W.A., and R.C. Wittman. 1996. *Colorado Flora: Eastern Slope.* 2nd Ed. University Press of Colorado. Niwot, Colo. 524 p.

QUALIFICATIONS OF SURVEYOR

Richard McEldowney has a B.S. in Wildlife Biology from the University of Montana, and a M.S. in Rangeland Ecosystem Science from Colorado State University. Mr. McEldowney is currently employed as a wetland ecologist with Science Applications International Corporation (SAIC) in Denver, Colorado and has completed wetland delineations, riparian/wetland functional assessments, and vegetation mapping throughout Colorado. Mr. McEldowney has completed surveys for *Gaura neomexicana ssp. coloradensis* along the south I-25 corridor between C-470 and Castle Rock, Colorado. He has inspected herbarium specimens of *Spiranthes diluvialis* and discussed their ecology with Lynn Riedel, the plant ecologist with City of Boulder Open Space responsible for monitoring *Spiranthes* populations found on their properties. Mr. McEldowney visited two different populations of *Spiranthes* on August 8, 2002. Below are selected photographs taken by Mr. McEldowney of Ute Ladies'-tresses orchid in Boulder, Colorado.

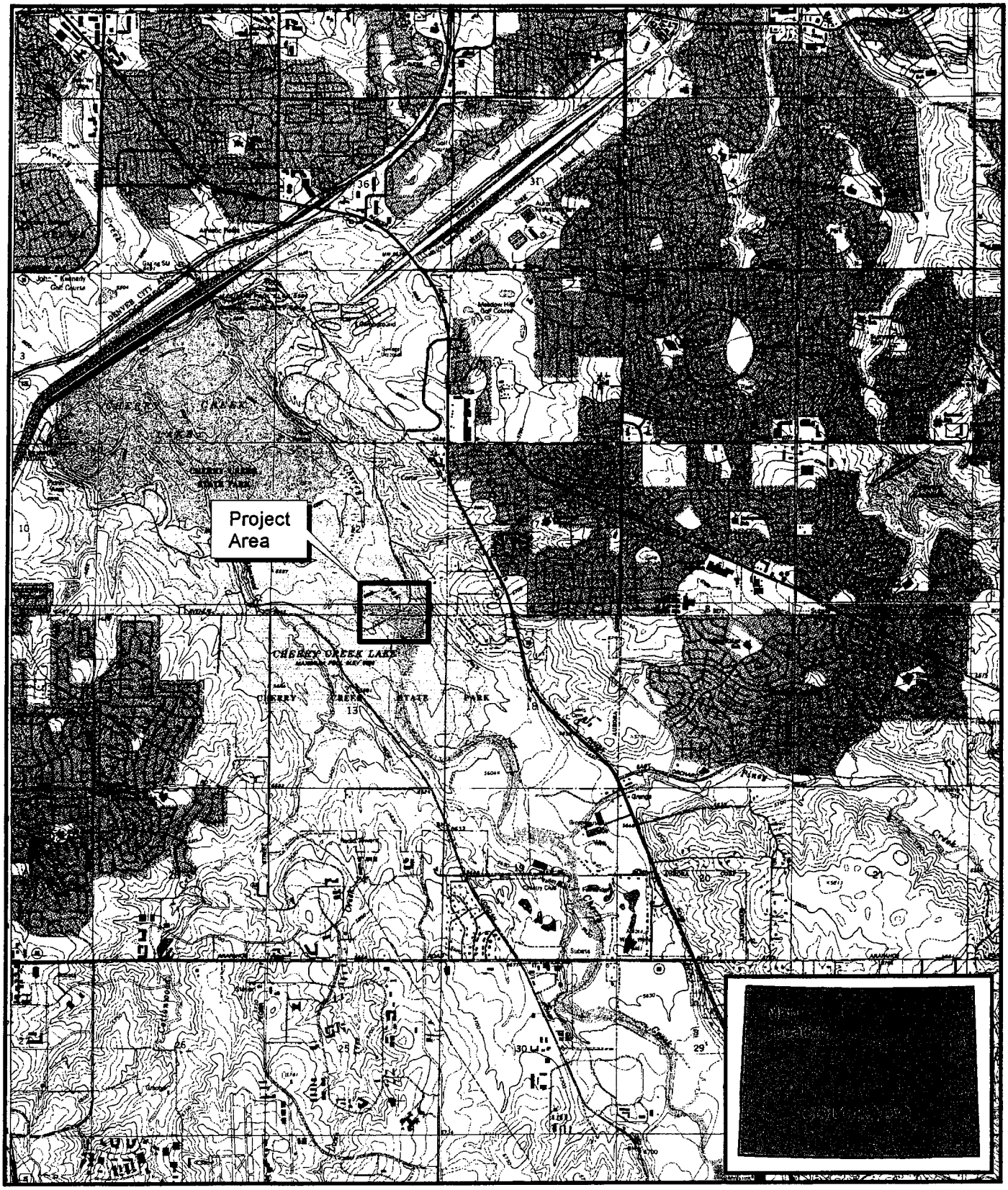
Spiranthes diluvialis habitat, Boulder, Colorado. Photograph taken by R. McEldowney 8/8/02.



Spiranthes diluvialis, Boulder, Colorado. Photograph taken by R. McEldowney 8/8/02.

APPENDIX A – MAPS

Cherry Creek State Park, Arapahoe County, Colorado



Base Map Source: 1:24,000 Scale USGS Topographic Maps
Fitzsimons and Parker, 1994

Figure 1. Project Vicinity Map for Threatened Plant Surveys, August 29, 2002
Cherry Creek State Park, Araphoe County, Colorado

APPENDIX B – SITE PHOTOGRAPHS

Cherry Creek State Park, Arapahoe County, Colorado

Photo 1. Looking ENE from west end of project area at bike path. 8/29/02.

Photo 2. West end of the project area on the SE side of the road. Thick understory, looking north. 8/29/02.

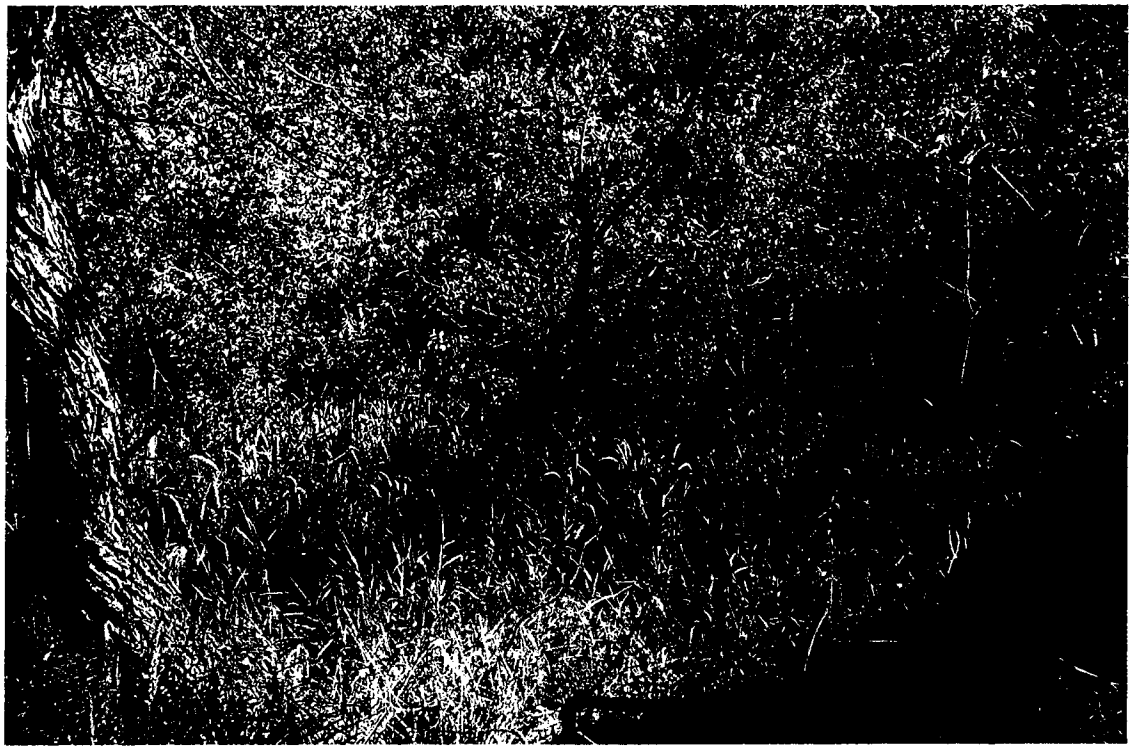


Photo 3. Southeast side of the road, looking north at the cottonwood forest. Forest opening on the right side of the photograph. 8/29/02.

Photo 4. Looking west at the marshy area adjacent to Cherry Creek on the SE side of the road. 8/29/02.

Photo 5. Looking west toward road along a trail on the SE side of the road. 8/29/02.

Photo 6. Looking east at Cherry Creek on the SE side of the road. 8/29/02.

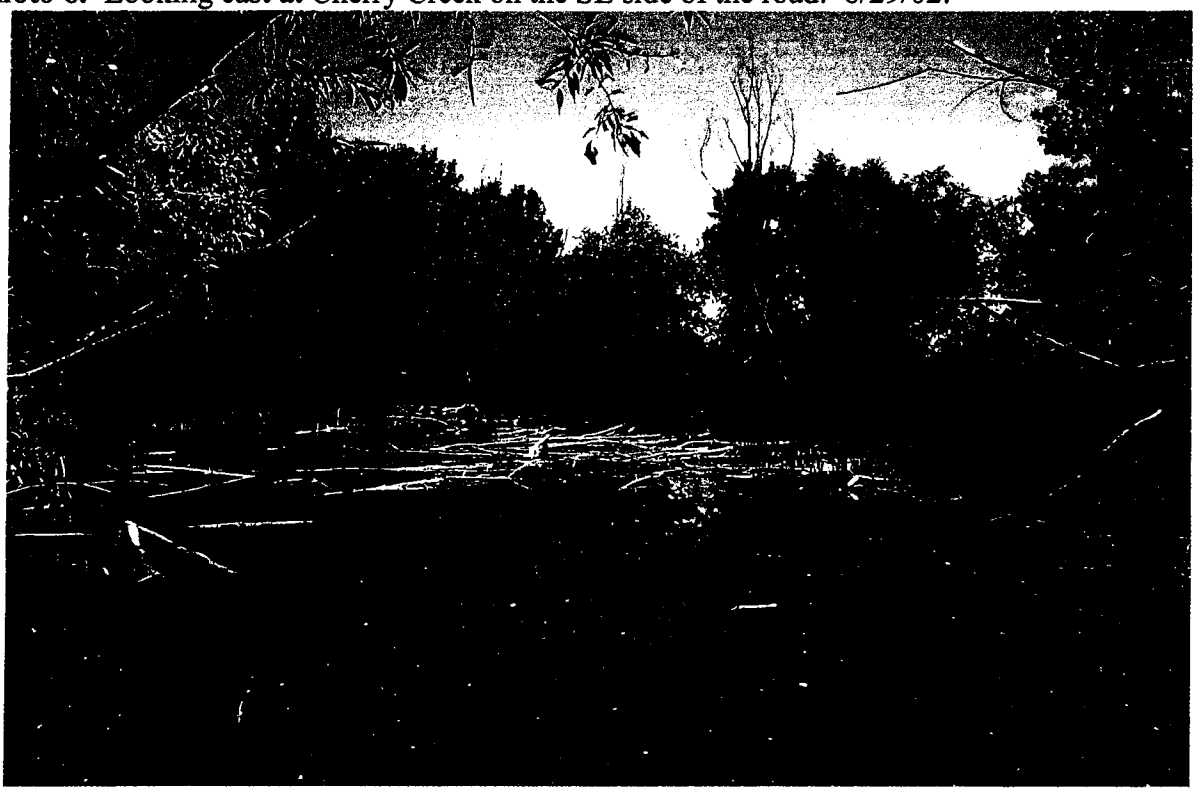


Photo 7. Looking north at the cottonwood/wheatgrass forest at the north end on the SE side of the road. 8/29/02.

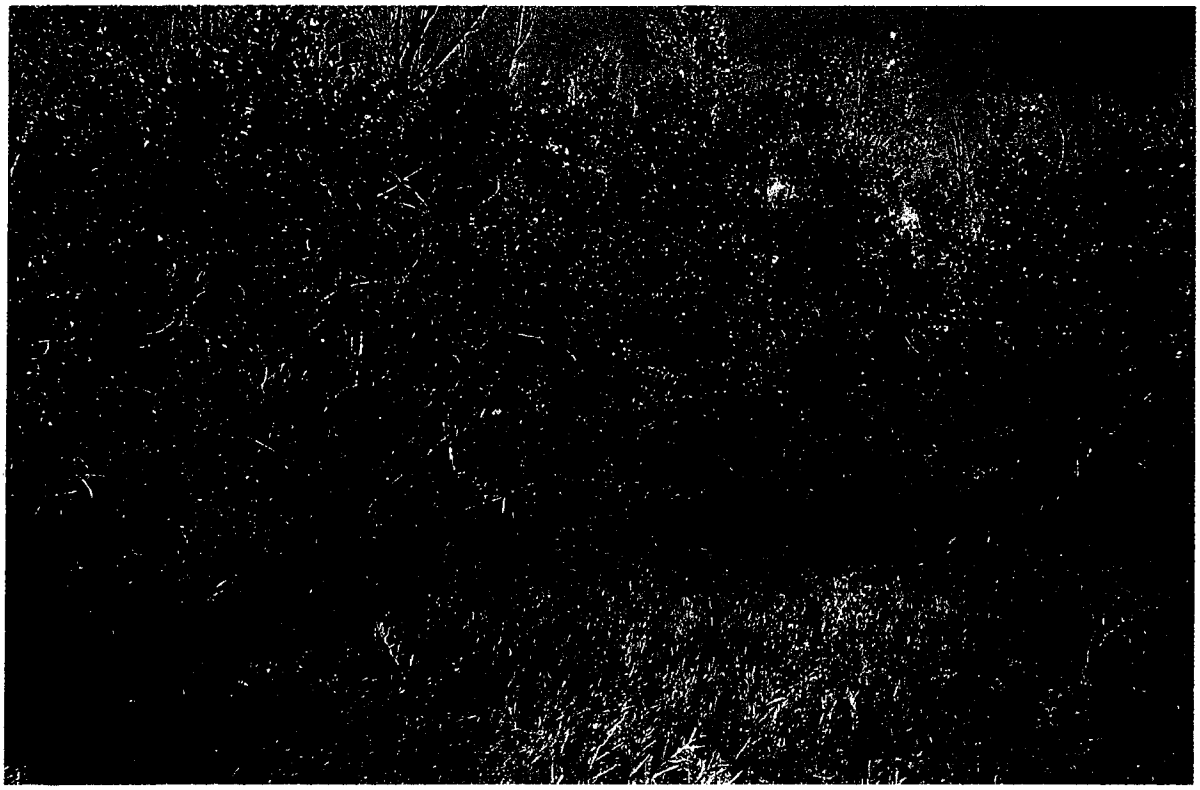


Photo 8. Looking west at dense coyote willow stand on the NW side of the road, at the north end of the project area. 8/29/02

Photo 9. Best potential habitat identified within the project area for either *Spiranthes diluvialis* or *Gaura neomexicana ssp. coloradensis*. Located on the NW side of the road, approximately 100 feet NE of Cherry creek. 8/29/02.

Photo 10. Looking west at Cherry Creek and wooly sedge community on the NW side of the road. 8/29/02.

Photo 11. Looking north at the forest on the NW side of the road. 8/29/02.